POPULATION DYNAMICS OF A SPONGE/MACROALGAL SYMBIOSIS: POSSIBLE CAUSES FOR A PATCHY DISTRIBUTION AT ONE TREE REEF, GREAT BARRIER REEF. *Memoirs of the Queensland Museum 44: 602. 1999*:- *Haliclona cymiformis* is a tropical marine sponge that is found only in association with a red macroalga, *Ceratodictyon spongiosum*. This association is commonly found on coral reef flats where it is frequently the most prominent macroscopic organism. At One Tree Reef, populations of *Haliclona/Ceratodictyon* are generally restricted to the rubble banks just inside the reef crest that surrounds One Tree Lagoon. Only one population of the association is found in the centre of the lagoon. It is likely that the lack of rocky substrata in the centre of the lagoon limits the recruitment of the association into new areas. Sexual reproduction by the sponge appears to be rare at OneTree Reef. At the rubble bank sites, populations of *Haliclona/Ceratodictyon* appear to be maintained by fragmentation and the size-frequency distribution is skewed toward smaller individuals. In the centre of the lagoon, clumps of the association grow to much larger sizes. Fusion experiments between individuals collected from different sites showed some histocompatibility, suggesting that existing populations of *Haliclona/Ceratodictyon* may have originated from the same parent population. ❐ *Porifera, Haliclona cymiformis, Ceratodictyon spongiosum, symbiosis, distribution, size-frequency, reproduction, fragmentation, histocompatibility.*

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